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## NOTIFICATION OF ELECTION

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METHOD FOR INSERTING OBJECTS INTO A WORKING AREA  
IN A COMPUTER APPLICATION

Technical field

The present invention relates to a method for facilitating the insertion of an object into a working area on a computer display, said method being implemented in a computer application software and comprising the  
5 step of receiving input from the user selecting where on the screen an object of a previously specified object type is to be inserted.

10 Background art

In numerous computer applications, objects are selected by a user and inserted into an area of a computer display. This is especially frequent in different kinds of programming and designing, where  
15 objects belonging to several different object types are available to the user for insertion into a working area, such as a worksheet, a document, or any other limited area of a screen, used by the active software application to display objects. The user first clicks on a particular  
20 type of object (e.g. a certain type of programming item) and then clicks on the location where an object of the particular type is desired.

In some applications a drag-and-drop procedure is utilized, meaning that the user clicks on the object type  
25 and without releasing the mouse button moves the cursor to the desired location and then releases the button. An object of the chosen type is hereby inserted at this location. This functionality is implemented in e.g. Visio from Visio Corp.

30 In other applications the cursor changes its appearance when an object type is clicked on, to indicate that an object will be inserted at the location of the

next click. This functionality is implemented in e.g. Corel Draw.

In some cases, objects of certain object types should only be inserted into specific parts of the working area, or in connection with objects of other predetermined object types. Particularly in certain types of programming, e.g. network PLC-programming, where the overall structure has to follow a predetermined pattern, this is a common situation. Inserting an object into a location where it is not ment to be located may result in a non-working object, or even in a non-working program, with tedious error searching as a result.

It is known in the art to implement test routines for each insertion, in order to avoid erroneous placement of objects. This can either be accomplished by making certain object types unavailable to the user unless certain predetermined conditions are met, or by refusing the insertion of a selected object into certain areas. However, the user then finds him/herself in a situation where the intended operation is impossible to perform, e.g. the object he/she intends to insert into a certain location is refused by the application. This is frustrating, especially as the user does not obtain information regarding why the object cannot be inserted, nor regarding what object can be inserted instead.

An even larger problem with known methods for inserting objects of different types into a working area is the fact that the cursor always needs to be moved between the icons or menus from which the object type is chosen, and the desired location.

Another problem is the icons or menus themselves. If menus are used, it can be difficult to quickly find the desired object type. Sometimes several sub-menus need to be opened in order to find a specific object type. If icons are used they normally provide a better overview, but instead they take up valuable space that is needed for other purposes.

Summary of the invention

A first object of the present invention is therefore to provide a method for inserting an object into a working area on a computer screen, that simplifies the procedure.

A second object of the present invention is to provide a method for inserting an object into a working area on a computer screen, wherein the need for icons or menus is eliminated.

A third object of the present invention is to provide a method for inserting an object into a working area on a computer screen, wherein the problem of attempting to make invalid insertions is avoided.

These objects are accomplished by using a method according to the preamble of claim 1, further characterized by the steps of indicating at least one subarea of the working area where an object is insertable, indicating an object type in association with each subarea, an object of said object type being insertable into said subarea, receiving input from the user selecting one of said at least one subarea, and inserting into the selected subarea an object of the type that is indicated at the selected subarea.

This results in a simple procedure for inserting objects into the working area. Instead of having to first select an object type, and then to select a location, the user only has to make one selection. A software implementing the method according to the invention indicates to the user locations where insertions are possible, and what type of object is insertable at each location. The input needed from the user to perform an insertion is thus reduced from two to one. According to the invention, one single piece of input is enough to insert an object at a valid location in the working area.

Further, the need for menus and icons is eliminated, as the user is given clear indications of what objects

are insertable into the working area. There is no need to hide, or make unavailable, contents in a menu, as it is only available objects that are displayed.

5 The method according to the invention is preferably used when restrictions are imposed on what objects can be inserted into the working area, and where they can be inserted. These restrictions can be caused for example by relationships between programming steps constituting a computer program, said steps being represented by the  
10 objects, or by physical relationships between processes or physical entities, said processes or entities being represented by the objects.

The inventive method avoids the above mentioned problem of making invalid insertions. These insertions  
15 can not even be attempted, as the user, even before the action to insert an object is performed, is made aware of what type of an object is insertable at a certain location.

A software implementing the method performs an  
20 identification of all possible, valid insertions of objects into the working area and indicates them to the user. The user only has to decide which of the insertions to perform.

According to one embodiment of the invention, the  
25 indication of said at least one subarea of the working area where an object is insertable includes graphically outlining said subarea.

According to another embodiment of the invention, the indication of said at least one subarea is  
30 activatable and deactivatable by the user. This makes it possible for the user to examine the results of his /her work without the indications of subareas visible. When the user intends to insert a new object, the indication is simply activated by giving a certain input to the  
35 software.

Input from the user is preferably received using a pointing device, preferably in electronic contact with

the software application and controlling a cursor on the display.

This makes it very easy for the user to provide input to the software application regarding where in the working area the user wishes to insert an object.

According to a further embodiment of the invention, the step of indicating at least one subarea of the working area where an object of a type that is insertable can be performed in response to the action of moving the cursor into said subarea.

In this way, the step of indicating a subarea is closely associated with the user activity of moving the mouse. No indications of subareas are displayed in the working area unless the user actually moves the cursor in the working area.

The step of indicating an object type in association with each subarea preferably comprises displaying a symbol representing said object type in connection to said subarea. According to one embodiment of the invention, this symbol is displayed by changing the appearance of the cursor, in response to the action of moving the cursor into said subarea.

One application of the method is in the field of network design. Hereinafter, the term "network" is used for any collection of objects, operations, events, processes, options, conditions etc. that logically relate to each other and form part of a system. Networks can appear in many contexts, for example organisation charts, circuit block diagrams or computer programs, and can be designed, or programmed, with the help of a computer in the above mentioned way by inserting objects of different types into a working area. Network programming is particularly useful when designing systems for automatic control, for example PLC-systems.

Normally, several different object types are available, where each type has specific physical properties. One object type can for example represent

physical events, while another might represent a conditional step, with several possible outcomes.

Brief description of the drawings

5 Preferred embodiments of the present invention, given by way of example only, will now be described in more detail, with reference to the accompanying drawings.

Fig 1 illustrates an environment in which the method according to the invention may be used.

10 Fig 2 is a schematic block diagram of a software application according to prior art.

Fig 3 is a schematic block diagram of a software application according to the present invention.

Fig 4 is an example of a working area on a display.

15 Fig 5 is a flowchart of a first embodiment of the method according to the invention.

Fig 6 is a flowchart of a second embodiment of the method according to the invention.

20 Fig 7 gives some examples of how indication of subareas and object types can appear in the working area 7 of the display.

Detailed description of preferred embodiments of the invention

25 Fig 1 illustrates an environment in which the method according to the invention can be utilized. A software application 1, e.g. a programming tool, is installed and running on a computer 2. A user 3 interacts with the application 1, giving instructions 9 to the software  
30 application through a keyboard 4 and with a pointing means, preferably a mouse 5. The application presents the results of the user's actions on a display unit, preferably a monitor 6, displaying to the user a working area 7, where operations corresponding to said actions  
35 are performed. Said operations may include inserting objects 8 into the working area 7, where they represent for example program actions or physical events.

Fig 2 shows a software application 1' according to prior art, suited for the insertion of objects into a working area. Said application 1' typically includes means 11 for receiving input from the user, means 12 for  
5 deciding how to respond to the input from the user, and means 13 to insert objects into the working area 7.

Fig 3 shows a software application 1 according to the present invention. The software comprises identification means 15 for identifying valid insertions  
10 of objects 8 into the working area 7. This means 15 is similar in structure to the means 12 in prior art, but with the important difference that it operates without waiting for user input. Instead of, as in prior art, controlling whether an insertion of an object requested  
15 by the user is in fact a valid insertion, the means 15 are operative to constantly identify locations in the working area where objects 8 are insertable, and what type of object is insertable in every location. In short, the means 15 anticipate all possible insertions that can  
20 be requested by the user, and identifies the ones that are valid.

Further, the application 1 is provided with indication means 16, for indicating information to the user on the monitor. Again, the structure of means 16 is  
25 not in itself unique, and similar indication techniques can be found in many software applications. According to the invention, however, the indication means 16 use identification data 17, supplied by the identification means 15, to indicate all available, valid insertions to  
30 the user in the present situation.

The software application 1 also comprises reception means 18 and insertion means 19, similar to the reception means 11 and the insertion means 13 of the prior art, respectively.

35 In the present context, the means 15, 16, 18, 19 are software routines included in the application 1. Of course, and as is well understood by a person skilled in



the art, in some cases one or several of these means 15, 16, 18, 19 can be comprised of separate software, or software associated with e.g. the monitor or mouse, said software operating together with the software application

5 1.

In the following description of the method according to the invention, said software application 1 is a program network design tool, a working area 7 of which is shown in fig 4. This type of programming is used for  
10 example in PLC-programming.

In the illustrated example, the program network 20 comprises two types of items, namely step items 21, which represent one or several physical actions, and transition items 22, which define conditions for moving the program  
15 control from one step item to another. Each item is represented by an object 21, 22 in the working area 7, and the relationship between the two types of items impose restrictions on how items can be inserted into the working area. For example, two step items cannot be  
20 connected to each other without an intermediate transition item.

Reference numerals 23a, 23b, 23c, 23d indicate four of several subareas in the working area 7, where objects are insertable. The subareas are naturally located in  
25 connection to the existing network, as this is where new objects can be inserted.

In the illustrated example, the subareas 23a, 23b, 23c, 23d are outlined by rectangles 25, which identify and limit each subarea. Of course, any indication using  
30 graphics, colour or text is possible. Further, in the vicinity of each subarea 23a-d, an object type 26a-d is indicated. Again, in the illustrated example, the object type 26a-d associated with each subarea 23a-d respectively, is indicated by a symbol which represents  
35 the associated object type 26a-d.

In the illustrated example, an inserted object normally includes an step item 21 and a transition item

22. Depending on where the object is inserted, however, the order of the two items vary. In subarea 23a, an object consisting of a transition item followed by an step item is insertable. This object type is represented  
5 by the symbol 26a. In subarea 23b, the order is reversed, and this object type is represented by the symbol 26b.

Another possible object is a fork 24a, 24b, which indicates a division of the network path. A fork can be inserted before (23c) or after (23d) a transition, and  
10 different symbols, 26c and 26d respectively, are associated with the two types of forks.

Fig 5 illustrates schematically a first embodiment of the method according to the invention. In step 30, the identification means 15 identifies subareas 23a, 23b of  
15 the working area where objects are insertable. Further, in step 31, the identification means 15 identifies what type of object can be inserted in each subarea. As mentioned, following a step item there must be a transition item and vice versa.

20 When the identification of subareas and insertable object types is performed, the program control waits (in step 32) for the user to activate a grid 25, 26a-d. This activation can be accomplished by hitting a key on the keyboard 4 or by using the mouse. Reception means 18 are  
25 arranged to receive and respond to such input by instructing the indication means 16 to activate the grid. The grid 25, 26a-d can take on any number of forms, but has the purpose of indicating a plurality of subareas in the working area 7 (step 33 in fig 5), and in association  
30 with each subarea an object type (step 34 in fig 5). Both steps 33 and 34 are performed by the indication means 16, which have received identification data 17 from the identification means.

The program control now waits for the user to click  
35 in one of the subareas (step 35), preferably using the mouse 5. Once a click in a subarea is detected by the reception means 18, the insertion means 19 inserts an

object of the indicated object type into the subarea. For example, if the user clicks in subarea 23a, an object of type 26a, consisting of a transition item and an step item is inserted into the subarea. Note that the user  
5 accomplishes the entire insertion with just one click. As an insertable, valid object type is associated with each subarea, a selection of one of the subareas is sufficient for inserting an object.

This insertion affects the network, typically  
10 extending it to include more items. The result of the insertion described above is the network 20' shown in fig 4b. The program control now instructs the identification means 15 to reidentify subareas and insertable object types (step 37 and 38). This results in an update of the  
15 grid in step 39 and 40, again using the indication means 16.

The program control then returns to step 35, and again waits for the user to click in a subarea, for the insertion of a new object. Of course, when the program  
20 control waits at for example step 35, the user can choose to deactivate the grid or to perform other actions in the application, such as provide an item with additional data, define parameters etc.

Another embodiment of the method according to the  
25 invention is showed in fig 6. Just as in fig 5, the first two steps 42, 43 identify subareas and insertable object types. Then, however, the program control waits for the user to move the mouse cursor into one of the subareas before (step 44). When the reception means 18 receive  
30 information of this situation, the indication means 16 are instructed to indicate this particular subarea (step 45) and the object type that is insertible into this subarea (step 46).

This indication technique is illustrated in fig 4b  
35 and 4c, where the cursor 28 is located in a subarea 23', 23'', resulting in the indication of the subarea and

object type with a rectangle 25', 25'' and a symbol 26', 26''.

The program control then waits for a user action (step 47). If the user moves the mouse cursor out of the subarea (move), the indications of subarea and insertable object type are removed (step 48) and program control returns to step 44.

If the user does not move the cursor, but instead clicks in said subarea (click) an object is inserted into the subarea (step 49). This insertion affects the network, typically extending it to include more items. Therefore, the program control now instructs the identification means 15 to reidentify subareas and insertable object types (step 50 and 51), before returning to step 44.

Of course, it is possible, and even advantageous, to implement a combination of the two embodiments described above. For example, a grid including only the rectangles 25 can be activated and deactivated, and at the same time the mouse cursor appearance changes to indicate what type of object is insertable into a subarea.

In some cases, for example when a fork 24a, 24b is inserted into the working area 7, it can be necessary to indicate a second location 27a, 27b, namely where the fork rejoins with the main path of the network. When this is the case, the insertion of an object 36, 49 is followed by a program step 52, 53 waiting for additional user input.

If, in one subarea, objects of different object types are insertable, this can be indicated by dividing the rectangle 25 into several smaller fields, each with an object type indicated in its vicinity. Alternatively, a list or table can be displayed beside the subarea, indicating different insertable objects.

Another solution is to indicate one object type when the cursor is moved into the subarea. Then, when the user presses the mouse button, alternative object types are

indicated. The user can then move the cursor to the desired object type, and release the button in this location, resulting in an insertion of an object of this type. Note that the user still only makes one click with  
5 the mouse, although a cursor move is possibly made between the press and release actions.

Another solution, preferred by the applicant, is to indicate several subareas of the standard size, next to each other, each one with one associated object type.  
10 This is illustrated in fig 4a, where objects 26a/26c and 26b/26d are insertable at the same location. When the user selects one of the subareas 23a/23c, 23b/23d, an object of the type indicated in that particular subarea is inserted, and the surrounding subareas are hidden or  
15 moved in the update following the insertion.

Many variations of the method according to the present invention are possible to a person skilled in the art. The appearance of the indications can, for example, be changed without losing the functionality intended in  
20 the claims.

## CLAIMS

1. Method for fascilitating the insertion of an object into a working area (7) on a computer display (6) said method being implemented in a computer application software (1) and comprising the step of receiving input (9) from the user (3) selecting where on the screen an object of a previously specified object type is to be inserted,
- 10       characterized by the steps of  
          indicating (33; 45) at least one subarea (23a-d; 23'; 23'') of the working area (7) where an object is insertable,  
          indicating (34; 46) an object type (26a-d; 26'; 26'') in association with each subarea (23a-d; 23'; 23''), an object of said object type being insertable into said subarea,  
          receiving input (35; 47) from the user selecting one of said at least one subarea, and  
20       inserting (36; 49) into the selected subarea an object of the type that is indicated in association with the selected subarea.
2. Method according to claim 1, wherein the step of  
25       indicating (33; 45) at least one subarea of the working area where an object is insertable comprises graphically outlining said at least one subarea.
3. Method according to claim 1 or 2, wherein the  
30       indication (33) of said at least one subarea is activatable and deactivatable by the user (3).
4. Method according to claim 1-3, wherein input (9) from the user is received using a pointing device (5).
- 35       5. Method according to claim 4, wherein the pointing device (5) is in electronic contact with the computer

application (1) and controls a cursor (28) on the display (6).

5       6. Method according to claim 4 or 5, wherein the step of indicating (45) at least one subarea (23'; 23'') of the working area where an object of a type that is insertable comprises graphically outlining said subarea when the cursor (28) is moved into said subarea.

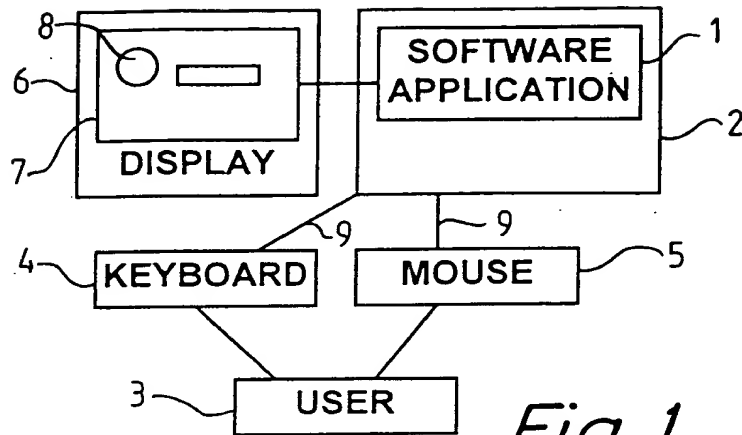
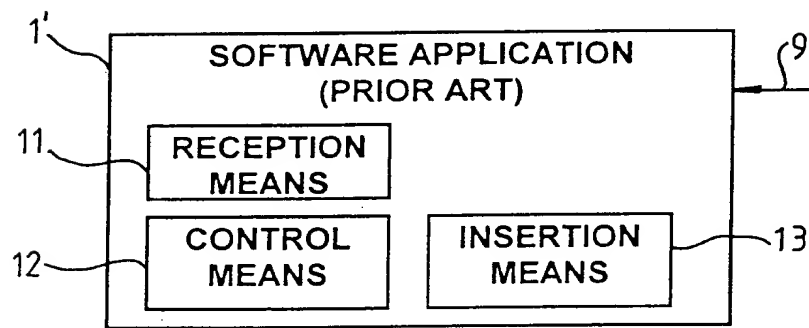
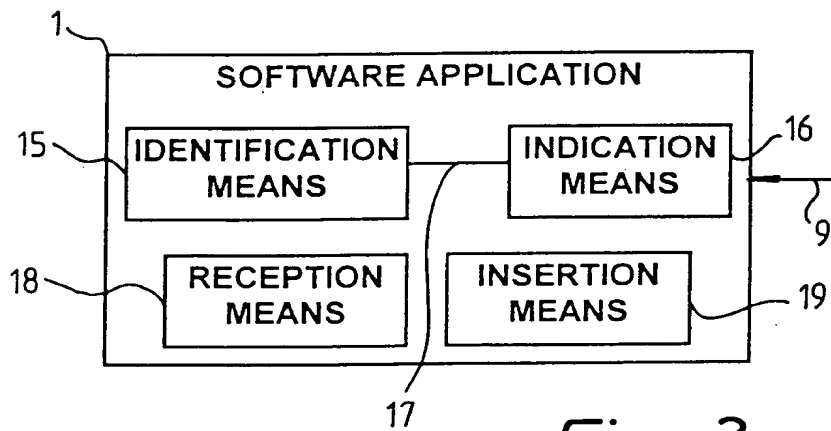
10       7. Method according to claim 4 - 6, wherein the step of indicating (34; 46) an object type in association with each subarea comprises displaying a symbol (26a-d) representing said object type in connection to said subarea.

15       8. Method according to claim 5 - 7, wherein the step of indicating (46) an object type in association with each subarea (23'; 23'') comprises changing the appearance of the cursor (28).

20       9. Method according to one of the previous claims, wherein the object types represent various physical items and are inserted into the working area to create a logical network.

25       10. Method according to claim 9, wherein the network represents a system for automation.

30       11. Computer-readable medium, on which is stored instructions for one or several general purpose computers (2), comprising means (15, 16, 18, 19) for enabling said one or said several computers (2) to perform the steps of the method according to claim 1 - 10.

*Fig. 1**Fig. 2**Fig. 3*



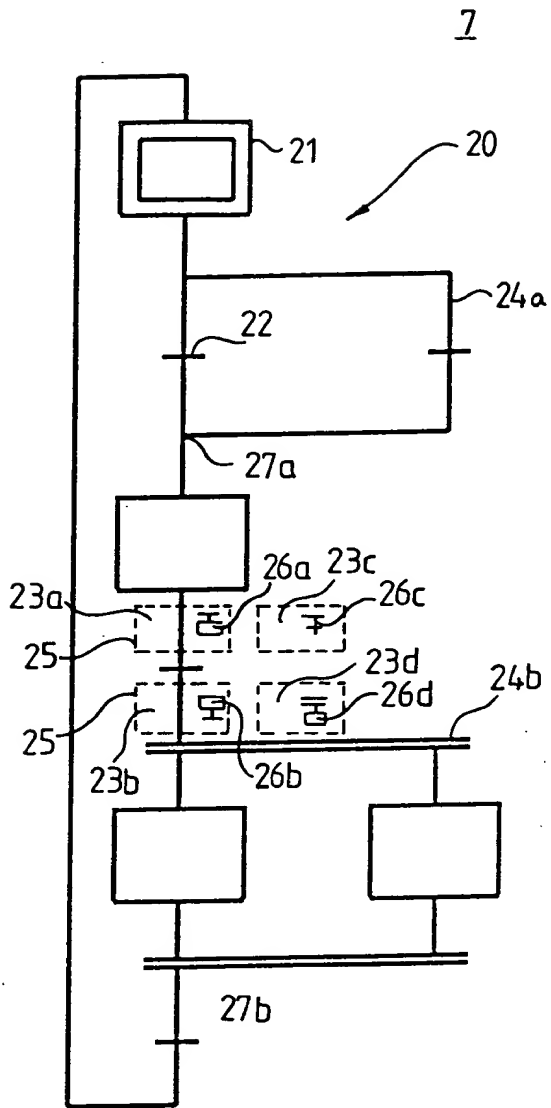


Fig. 4a

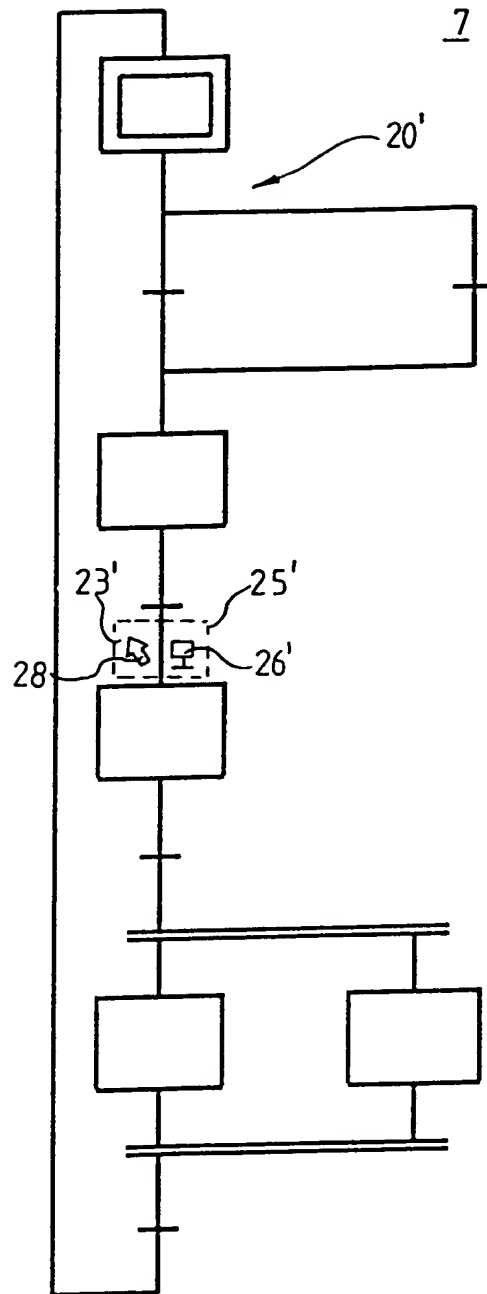
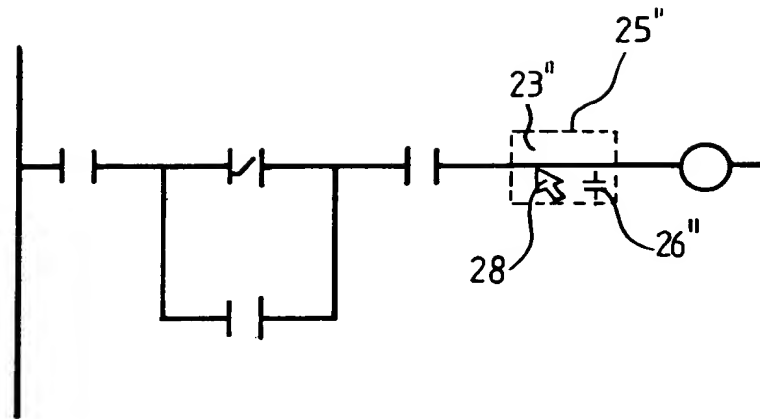
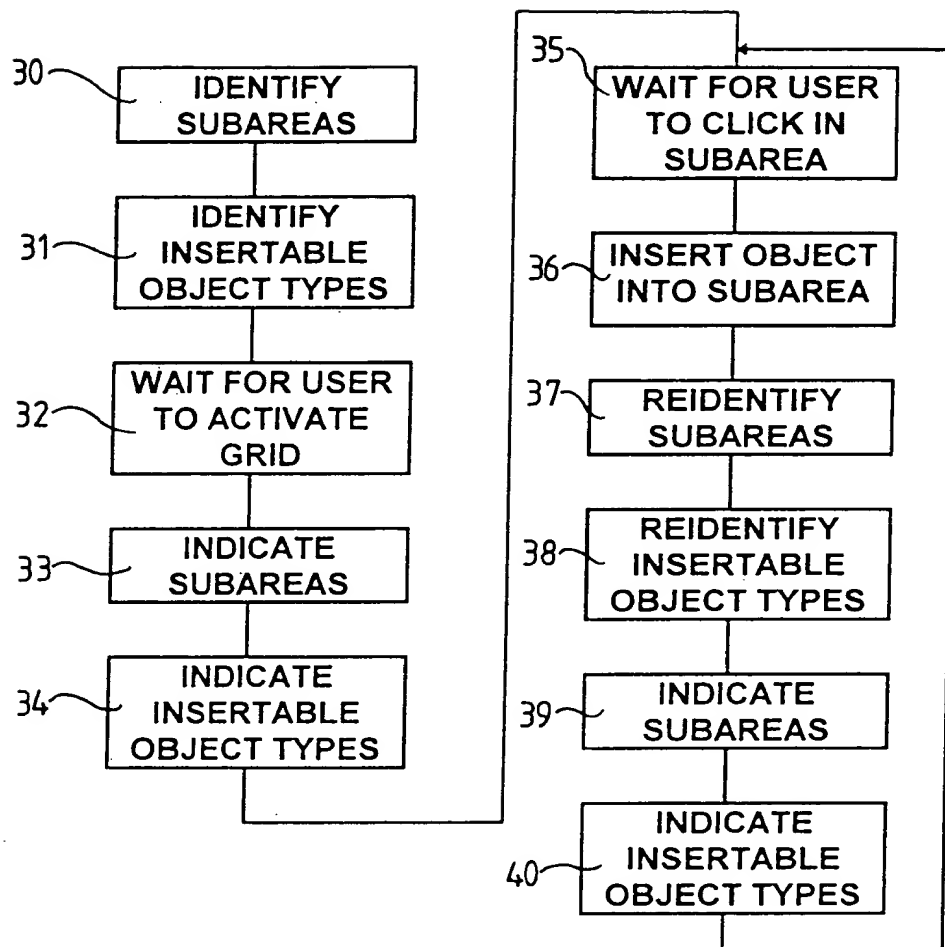
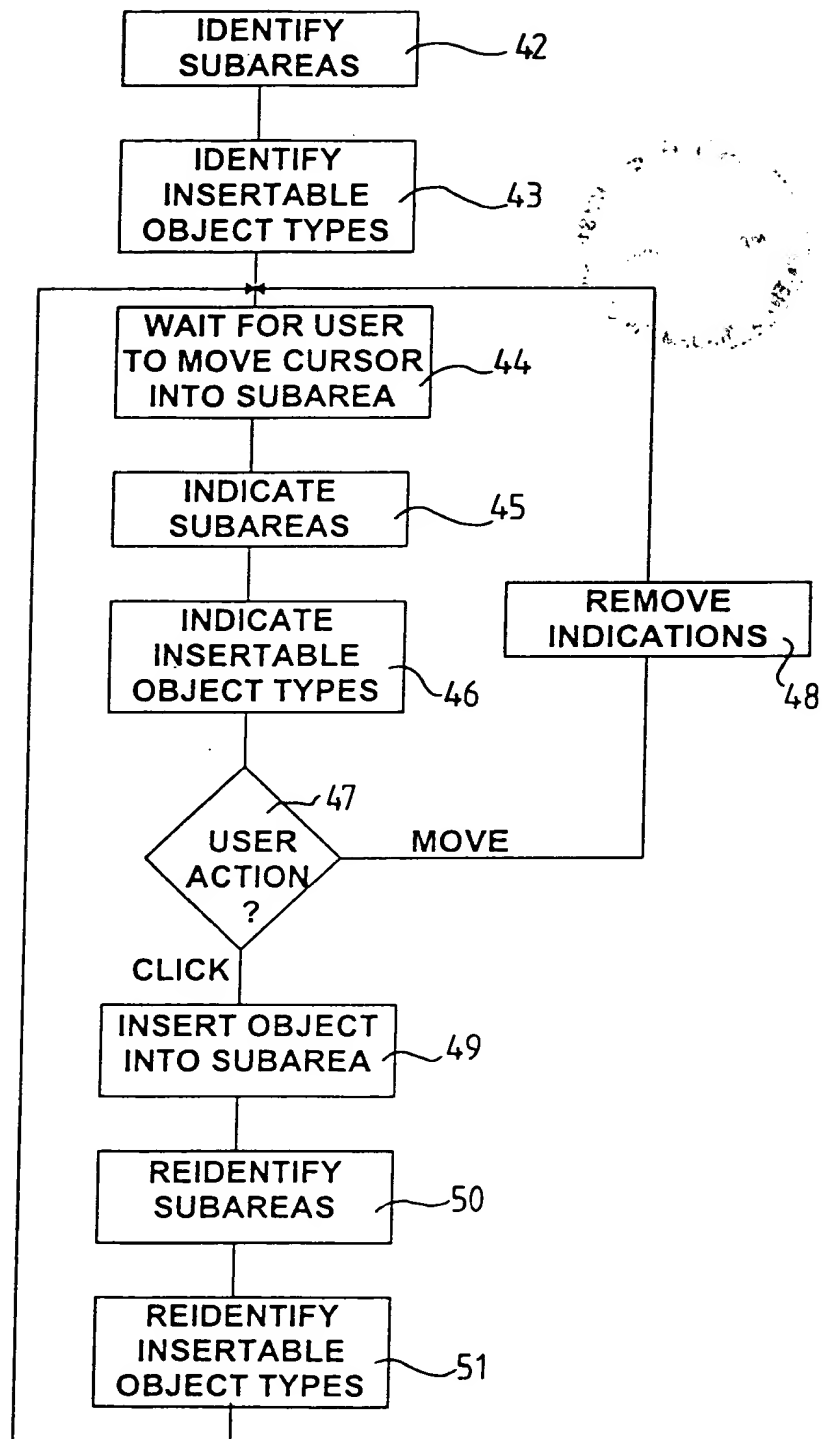


Fig. 4b

*Fig. 4c*

*Fig. 5*

*Fig. 6*

CLAIMS

1. Method for fascilitating the insertion of an object into a working area (7) on a computer display (6) said method being implemented in a computer application software (1) and comprising the step of receiving input (9) from the user (3) selecting where on the screen an object of a previously specified object type is to be inserted,

characterized by the steps of indicating (33; 45) at least one subarea (23a-d; 23'; 23'') of the working area (7) where an object is insertable,

indicating (34; 46) an object type (26a-d; 26'; 26'') in association with each subarea (23a-d; 23'; 23''), an object of said object type being insertable into said subarea,

receiving input (35; 47) from the user selecting one of said at least one subarea, and

inserting (36; 49) into the selected subarea an object of the type that is indicated in association with the selected subarea.

2. Method according to claim 1, wherein the step of indicating (33; 45) at least one subarea of the working area where an object is insertable comprises graphically outlining said at least one subarea.

3. Method according to claim 1 or 2, wherein the indication (33) of said at least one subarea is activatable and deactivatable by the user (3).

4. Method according to claim 1-3, wherein input (9) from the user is received using a pointing device (5).

5. Method according to claim 4, wherein the pointing device (5) is in electronic contact with the computer

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application (1) and controls a cursor (28) on the display (6).

5       6. Method according to claim 4 or 5, wherein the step of indicating (45) at least one subarea (23'; 23'') of the working area where an object of a type that is insertable comprises graphically outlining said subarea when the cursor (28) is moved into said subarea.

10       7. Method according to claim 4 - 6, wherein the step of indicating (34; 46) an object type in association with each subarea comprises displaying a symbol (26a-d) representing said object type in connection to said subarea.

15       8. Method according to claim 5 - 7, wherein the step of indicating (46) an object type in association with each subarea (23'; 23'') comprises changing the appearance of the cursor (28).

20       9. Method according to one of the previous claims, wherein the object types represent various physical items and are inserted into the working area to create a logical network.

25       10. Method according to claim 9, wherein the network represents a system for automation.

30       11. Computer-readable medium, on which is stored instructions for one or several general purpose computers (2), comprising means (15, 16, 18, 19) for enabling said one or said several computers (2) to perform the steps of the method according to claim 1 - 10.



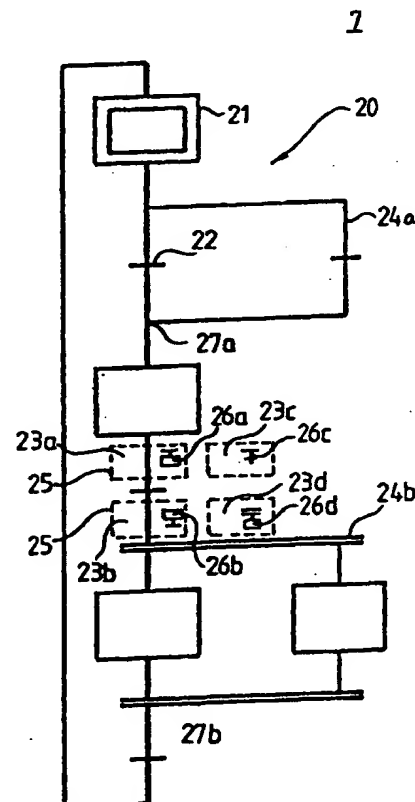
## INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

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| <b>(21) International Application Number:</b> PCT/SE98/02183<br><b>(22) International Filing Date:</b> 30 November 1998 (30.11.98)<br><b>(71) Applicant (for all designated States except US):</b> ACTCON CONTROL AB [SE/SE]; Importgatan 7, S-422 43 Hisings Backa (SE).<br><b>(72) Inventors; and</b><br><b>(75) Inventors/Applicants (for US only):</b> TERNULF, Yngve [SE/SE]; Maskinkajen 9, S-417 64 Göteborg (SE). POUR-MAKHDOMI, Shahram [SE/SE]; Hasselvägen 25, S-435 38 Mölnlycke (SE). OTREUS, Finn [SE/SE]; Flädervägen 11, S-435 38 Mölnlycke (SE).<br><b>(74) Agent:</b> AWAPATENT AB; P.O. Box 11394, S-404 28 Göteborg (SE). |           | <b>(81) Designated States:</b> AL, AM, AT, AT (Utility model), AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, CZ (Utility model), DE, DE (Utility model), DK, DK (Utility model), EE, EE (Utility model), ES, FI, FI (Utility model), GB, GD, GE, GH, GM, HR, HU, ID, IL, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SK (Utility model), SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZW, ARIPO patent (GH, GM, KE, LS, MW, SD, SZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG).<br><br><b>Published</b><br><i>With international search report.</i> |

**(54) Title:** METHOD FOR INSERTING OBJECTS INTO A WORKING AREA IN A COMPUTER APPLICATION

**(57) Abstract**

The present invention relates to a method for facilitating the insertion of an object in a working area on a computer display, and is implemented in a computer application software. The method comprises the steps of indicating at least one subarea of the working area where an object is insertable, indicating an object type in association with each subarea, an object of said object type being insertable in said subarea, receiving input from the user selecting one of the at least one subarea, and inserting in the selected subarea an object of the type that is indicated at the selected subarea. Through this method, the user only needs to provide one single piece of input in order to insert an object in a valid location in a working area.



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## INTERNATIONAL SEARCH REPORT

International application No.

PCT/SE 98/02183

## A. CLASSIFICATION OF SUBJECT MATTER

IPC6: G06F 3/44

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC6: G06F

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

SE,DK,FI,NO classes as above

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

WPI, PAJ

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

| Category* | Citation of document, with indication, where appropriate, of the relevant passages  | Relevant to claim No. |
|-----------|---|-----------------------|
| X         | US 5481712 A (WILLIAM M. SILVER ET AL),<br>2 January 1996 (02.01.96), column 1,<br>line 35 - column 4, line 44, figures 1-3, claims<br>1-34, abstract<br>-- | 1-11                  |
| A         | US 5524238 A (JOHN A. MILLER ET AL), 4 June 1996<br>(04.06.96), see the whole document<br>--  | 1-11                  |
| A         | WO 9806219 A1 (STARSIGHT TELECAST, INCORPORATED),<br>12 February 1998 (12.02.98), page 2,<br>line 31 - page 3, line 17; page 4,<br>line 9 - line 13<br>--   | 1-11                  |

☒ Further documents are listed in the continuation of Box C.
 ☒ See patent family annex.

|   |  |
|---|--|
| * Special categories of cited documents:  | "I" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention  |
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| "E" earlier document but published on or after the international filing date  | "Y" document of particular relevance: the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art |
| "L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified) | "&" document member of the same patent family  |
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| "P" document published prior to the international filing date but later than the priority date claimed  |  |

|  |   |
|--|---|
| Date of the actual completion of the international search<br><br>17 Sept. 1999   | Date of mailing of the international search report<br><br>22 -09- 1999        |
| Name and mailing address of the ISA/<br>Swedish Patent Office<br>Box 5055, S-102 42 STOCKHOLM<br>Facsimile No. +46 8 666 02 86 | Authorized officer<br><br>Göran Magnusson/mj<br>Telephone No. +46 8 782 25 00 |

## INTERNATIONAL SEARCH REPORT

International application No.

PCT/SE 98/02183

C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

| Category* | Citation of document, with indication, where appropriate, of the relevant passages                       | Relevant to claim No. |
|-----------|--|-----------------------|
| A         | US 4742473 A (JOEL K. SHUGAR ET AL), 3 May 1988<br>(03.05.88), abstract<br>--                            | 1-11                  |
| E,A       | US 5862379 A (ROBERT V. RUBIN ET AL),<br>19 January 1999 (19.01.99), claims 1-24,<br>abstract<br>--      | 1-11                  |
| E,A       | WO 9928794 A2 (KLÖCKNER-MOELLER GMBH),<br>10 June 1999 (10.06.99), see the whole document<br>--<br>----- | 1-11                  |

# INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No.

PCT/SE 98/02183

| Patent document<br>cited in search report |         |    | Publication<br>date | Patent family<br>member(s)   | Publication<br>date  |
|---|---------|----|---------------------|------------------------------|----------------------|
| US  | 5481712 | A  | 02/01/96            | NONE                         |                      |
| US  | 5524238 | A  | 04/06/96            | NONE                         |                      |
| WO  | 9806219 | A1 | 12/02/98            | AU 3908297 A<br>EP 0919097 A | 25/02/98<br>02/06/99 |
| US  | 4742473 | A  | 03/05/88            | NONE                         |                      |
| US  | 5862379 | A  | 19/01/99            | NONE                         |                      |
| WO  | 9928794 | A2 | 10/06/99            | NONE                         |                      |

## PATENT COOPERATION TREATY

## PCT

## INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

|  |   |   |
|--|---|---|
| Applicant's or agent's file reference<br>2986568   | <b>FOR FURTHER ACTION</b> See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416) |   |
| International application No.<br>PCT/SE98/02183  | International filing date ( <i>day month year</i> )<br>30.11.1998   | Priority date ( <i>day month year</i> ) |
| International Patent Classification (IPC) or national classification and IPC7<br>G06F 3/44 |   |   |
| Applicant<br>Actcon Control AB et al   |   |   |

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.

2. This REPORT consists of a total of 4 sheets, including this cover sheet.

☒ This report is also accompanied by ANNEXES, i.e., sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

These annexes consist of a total of 2 sheets.

3. This report contains indications relating to the following items:

- I ☒ Basis of the report
- II ☐ Priority
- III ☐ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- IV ☐ Lack of unity of invention
- V ☒ Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- VI ☐ Certain documents cited
- VII ☐ Certain defects in the international application
- VIII ☐ Certain observations on the international application

|  |   |
|--|---|
| Date of submission of the demand<br><br>19.05.2000   | Date of completion of this report<br><br>28.03.2001                     |
| Name and mailing address of the IPEA/SE<br>Patent- och registreringsverket<br>Box 5055<br>S-102 42 STOCKHOLM<br>Facsimile No. 08-667 72 88 | Authorized officer<br><br>Erik Veillas/LR<br>Telephone No. 08-782 25 00 |

## INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.

PCT/SE98/02183

**I. Basis of the report****1. With regard to the elements of the international application:\***

- ☐ the international application as originally filed
- ☒ the description:  
pages 1-12, as originally filed  
pages \_\_\_\_\_, filed with the demand  
pages \_\_\_\_\_, filed with the letter of \_\_\_\_\_
- ☒ the claims:  
pages \_\_\_\_\_, as originally filed  
pages \_\_\_\_\_, as amended (together with any statement) under article 19  
pages \_\_\_\_\_, filed with the demand  
pages 13-14, filed with the letter of 22.03.2001
- ☒ the drawings:  
pages 1-5, as originally filed  
pages \_\_\_\_\_, filed with the demand  
pages \_\_\_\_\_, filed with the letter of \_\_\_\_\_
- ☐ the sequence listing part of the description:  
pages \_\_\_\_\_, as originally filed  
pages \_\_\_\_\_, filed with the demand  
pages \_\_\_\_\_, filed with the letter of \_\_\_\_\_

**2. With regard to the language, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.**

These elements were available or furnished to this Authority in the following language \_\_\_\_\_ which is:

- ☐ the language of a translation furnished for the purposes of international search (under Rule 23.1(b)).
- ☐ the language of publication of the international application (under Rule 48.3(b)).
- ☐ the language of the translation furnished for the purposes of international preliminary examination (under Rules 55.2 and/or 55.3).

**3. With regard to any nucleotide and/or amino acid sequence disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:**

- ☐ contained in the international application in written form.
- ☐ filed together with the international application in computer readable form.
- ☐ furnished subsequently to this Authority in written form.
- ☐ furnished subsequently to this Authority in computer readable form.
- ☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
- ☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

**4. ☐ The amendments have resulted in the cancellation of:**

- ☐ the description, pages \_\_\_\_\_
- ☐ the claims, Nos. \_\_\_\_\_
- ☐ the drawings, sheet/fig \_\_\_\_\_

**5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2 (c)).\*\***

\* Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are annexed to this report since they do not contain amendments (Rules 70.16 and 70.17).

\*\* Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.

## INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.

PCT/SE98/02183

**V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement****1. Statement**

|                               |        |             |     |
|-------------------------------|--------|-------------|-----|
| Novelty (N)                   | Claims | <u>1-11</u> | YES |
|                               | Claims |             | NO  |
| Inventive step (IS)           | Claims | <u>1-11</u> | YES |
|                               | Claims |             | NO  |
| Industrial applicability (IA) | Claims | <u>1-11</u> | YES |
|                               | Claims |             | NO  |

**2. Citations and explanations (Rule 70.7)**

The claimed invention relates to a method for inserting an object in a working area on a computer display. According to that method, the insertion of objects is facilitated by restricting the user selection possibilities to a pre-indicated set of valid insertions in dependence on the location where the insertion is to take place. The set of valid insertions is displayed at the location of the desired insertion, which alleviates the user from the need of moving the selection cursor between the desired location of insertion and a menu or an icon repository. Apart from assuring validity of the selection, the claimed method allows the user to select an object type and a location at the same time using only a single selection step. This requires a step of identifying which sub-areas an object can be inserted in.

The International Search Report revealed the following document:

US, A, 5481712

**Statement**

New claims have been filed with the letter of the 22<sup>nd</sup> March 2001. The independent claim 1 has been amended and specifies clearly that this is the computer program in charge of performing the method that identifies the sub-areas into which objects may be inserted and identifies which objects may be inserted in theses sub-areas.

US, A, 5481712 discloses a method for automated generation of a computer program comprising steps related to modification of programming statements in a working area containing a displayed program (see claims 18-20). Those steps comprise a positioning step for marking a location of interest, a menu step for graphically displaying one or more syntactically

.../...

## INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.

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**Supplemental Box**

(To be used when the space in any of the preceding boxes is not sufficient)

Continuation of: V

valid modifications, an input step for inputting an operator selection corresponding to the displayed menu, an update step for performing the modification according to the inputted selection. The modifications may be insertions but also deletions (see col 2 line 9 - 31). Graphically outlining a sub-area in conjunction with the positioning step is specifically mentioned (see col 2 line 49-54).

The method of US, A, 5481712 leads however to the same main advantage as the claimed invention, namely assuring validity of an object selected for insertion. The objective problem of the invention is thus to provide a more practical method of inserting valid objects in a logical network.

By letting the application software identifying the sub-areas where an object may be inserted, the invention claimed in new claim 1 achieves this goal since a user only needs a single selection step to select an object type and a location. In the contrary, in US, A, 5481712, the user needs marking a location of interest.

There exist methods for allowing single-click selections at the priority date of the invention. These methods are however usually based on an implicit user selection step: an application software observes the motion of the cursor, also called focus, and considers the motion of the cursor to given areas as a trigger for a given action.

The method of the invention gives an alternative solution to the objective problem where the identification of valid insertion areas is not conditioned by any user step.

With respect to these arguments, the invention according to claims 1-11 is novel, has industrial applicability, and is considered to involve an inventive step.

1. Method for facilitating the insertion of an  
object into a working area (7) on a computer display (6)  
5 said method being performed by a computer application  
software (1) for creating a logical network and  
comprising the step of receiving input (9) from the user  
(3) selecting where on the screen an object of a  
previously specified object type is to be inserted,  
10 characterized by the steps of  
identifying (30; 42) at least one subarea (23a-d;  
23'; 23'') of the working area (7) where an object is  
insertable,  
identifying (31; 43) what type of object can be  
15 insertable in said subarea,  
indicating (33; 45) said at least one subarea,  
indicating (34; 46) said object type (26a-d; 26';  
26'') in association with each subarea (23a-d; 23';  
23''),  
20 receiving input (35; 47) from the user selecting one  
of said at least one subarea, and  
inserting (36; 49) into the selected subarea an  
object of the type that is indicated in association with  
the selected subarea.

25

2. Method according to claim 1, wherein the step of  
indicating (33; 45) at least one subarea of the working  
area where an object is insertable comprises graphically  
outlining said at least one subarea.

30

3. Method according to claim 1 or 2, wherein the  
indication (33) of said at least one subarea is  
activatable and deactivatable by the user (3).

35

4. Method according to claim 1-3, wherein input (9)  
from the user is received using a pointing device (5).

AMENDED SHEET



2 2 -03- 2001

14

5. Method according to claim 4, wherein the pointing device (5) is in electronic contact with the computer application (1) and controls a cursor (28) on the display (6).

5

6. Method according to claim 4 or 5, wherein the step of indicating (45) at least one subarea (23'; 23'') of the working area where an object of a type that is insertable comprises graphically outlining said subarea when the cursor (28) is moved into said subarea.

10

7. Method according to claim 4 - 6, wherein the step of indicating (34; 46) an object type in association with each subarea comprises displaying a symbol (26a-d) representing said object type in connection to said subarea.

15

8. Method according to claim 5 - 7, wherein the step of indicating (46) an object type in association with each subarea (23'; 23'') comprises changing the appearance of the cursor (28).

20

9. Method according to one of the previous claims, wherein the object types represent various physical items that are inserted into the working area to create said network.

25

10. Method according to claim 9, wherein the network represents a system for automation.

30

11. Computer-readable medium, on which is stored instructions for one or several general purpose computers (2), comprising means (15, 16, 18, 19) for enabling said one or said several computers (2) to perform the steps of the method according to claim 1 - 10.

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AMENDED SHEET